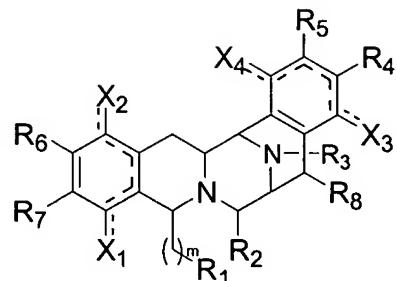


Amendments to the Claims

This following Listing of the Claims replaces all prior versions, and listings, of claims in the application:

Listing of Claims:

1. A compound having the structure (I):



(I)

wherein R_1 is ~~NR_AR_B, -OR_A, or -SR_A~~, ~~-C(=O)R_A, -C(=S)R_A, -S(O)₂R_A, or an aliphatic, heteroaliphatic, aryl, heteroaryl, (aliphatic)aryl, (aliphatic)heteroaryl, (heteroaliphatic)aryl, or (heteroaliphatic)heteroaryl moiety~~, wherein each occurrence of R_A and R_B is independently hydrogen, $-(C=O)R_C$, $-NHR_C$, $-(SO_2)R_C$, $-OR_C$, or an aliphatic, heteroaliphatic, aryl, or heteroaryl moiety, or R_A and R_B , when taken together form an aryl, heteroaryl, cycloaliphatic, or cycloheteroaliphatic moiety, wherein each occurrence of R_C is independently hydrogen, $-OR_D$, $-SR_D$, $-NHR_D$, $-(C=O)R_D$, or an aliphatic, heteroaliphatic, aryl, or heteroaryl moiety, wherein each occurrence of R_D is independently hydrogen, a protecting group, or an aliphatic, heteroaliphatic, aryl, heteroaryl, acyl, alkoxy, aryloxy, alkylthio, arylthio, heteroaryloxy, or heteroarylthio moiety;

wherein R_2 is hydrogen, $-OR_E$, $=O$, $-C(=O)R_E$, $-CO_2R_E$, $-CN$, $-SCN$, halogen, $-SR_E$, $-SOR_E$, $-SO_2R_E$, $-NO_2$, $-N(R_E)_2$, $-NHC(O)R_E$, or an aliphatic, heteroaliphatic, aryl, or heteroaryl moiety, wherein each occurrence of R_E is independently hydrogen, a protecting group, or an

aliphatic, heteroaliphatic, aryl, heteroaryl, acyl, alkoxy, aryloxy, alkylthio, arylthio, heteroaryloxy, or heteroarylthio moiety;

wherein R₃ is hydrogen, a nitrogen protecting group, -COOR_F, -COR_F, -CN, or an aliphatic, heteroaliphatic, aryl, or heteroaryl moiety, wherein each occurrence of R_F is independently hydrogen, a protecting group, or an aliphatic, heteroaliphatic, aryl, heteroaryl, alkoxy, aryloxy, alkylthio, arylthio, heteroaryloxy, or heteroarylthio moiety;

wherein R₄ and R₆ are each independently hydrogen, or an aliphatic, heteroaliphatic, aryl, heteroaryl, acyl, alkoxy, aryloxy, alkylthio, arylthio, heteroaryloxy, or heteroarylthio moiety;

wherein R₅ and R₇ are each independently hydrogen, -OR_G, -C(=O)R_G, -CO₂R_G, -CN, -SCN, halogen, -SR_G, -SOR_G, -SO₂R_G, -NO₂, -N(R_G)₂, -NHC(O)R_G, or an aliphatic, heteroaliphatic, aryl or heteroaryl moiety, wherein each occurrence of R_G is independently hydrogen, a protecting group, or an aliphatic, heteroaliphatic, aryl, heteroaryl, acyl, alkoxy, aryloxy, alkylthio, arylthio, heteroaryloxy, or heteroarylthio moiety;

wherein R₈ is hydrogen, alkyl, -OH, protected hydroxyl, =O, -CN, -SCN, halogen, -SH, protected thio, alkoxy, thioalkyl, amino, protected amino, or alkylamino;

wherein m is 0-5;

wherein X₁, X₂, X₃ and X₄ are each independently hydrogen, -OR_H, =O, -C(=O)R_H, -CO₂R_H, -CN, -SCN, halogen, -SR_H, -SOR_H, -SO₂R_H, -NO₂, -N(R_H)₂, -NHC(O)R_H, or an aliphatic, heteroaliphatic, aryl, or heteroaryl moiety, wherein each occurrence of R_H is independently hydrogen, a protecting group, or an aliphatic, heteroaliphatic, aryl, heteroaryl, acyl, alkoxy, aryloxy, alkylthio, arylthio, heteroaryloxy, or heteroarylthio moiety;

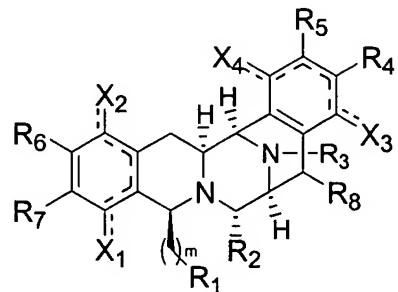
whereby if at least either X₁ and X₂ or X₃ and X₄ are doubly bonded to the 6-membered ring, then the dotted bonds in either or both of the 6-membered rings represent two single bonds and one double bond, and a quinone moiety is generated, or if at least either X₁ and X₂ or X₃ and X₄ are singly bonded to the 6-membered ring, then the dotted bonds in either or both of the 6-membered rings represent two double bonds and one single bond, and a hydroquinone moiety is generated;

whereby each of the foregoing aliphatic, heteroaliphatic and alkyl moieties may independently be substituted or unsubstituted, branched or unbranched, or cyclic or acyclic, and each of the foregoing aryl or heteroaryl moieties may independently be substituted or

unsubstituted; and

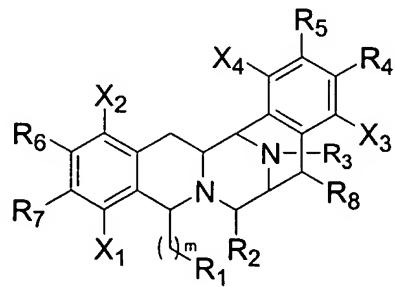
pharmaceutically acceptable derivatives thereof.

2. The compound of claim 1, wherein the compound has the stereochemistry and structure of formula (Ia):



(Ia)

3. The compound of claim 1, wherein the compound has the structure (II):

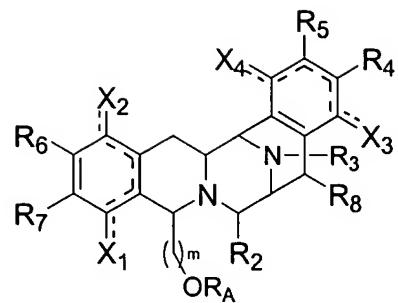


(II)

4. (Canceled)

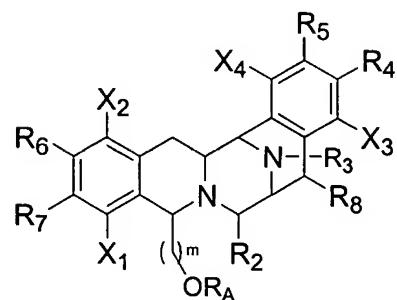
5. (Canceled)

6. The compound of claim 1, wherein the compound has the structure (V):



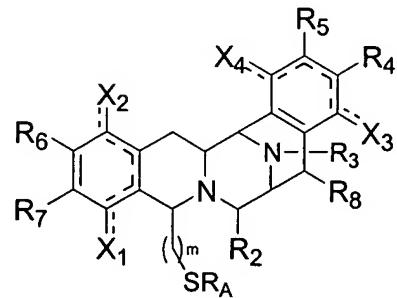
(V)

7. The compound of claim 1, wherein the compound has the structure (VI):



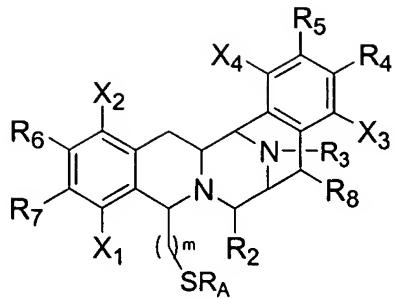
(VI)

8. The compound of claim 1, wherein the compound has the general structure (VII):



(VII)

9. The compound of claim 1, wherein the compound has the general structure (VIII):



(VIII)

10. (Canceled)

11. (Canceled)

12. The compound of claim 1, having one or more of the following limitations:

when m is 1, R₁ excludes any one or more of the following groups: -NH(protecting group), -NH₂, -NHCOCOMe, -NHCOC(Me)(OMe)(OMe), -NHCOCH(NH₂)CH₃, -NHCOCH(NH(acyl))CH₃ -NHCOCH(NH₂)Ac, or NHCOCH(NHCOOBn)(Me); -O(C=O)C(CH₃)=C(CH₃)H; -OH, -O(protecting group), -O(COCH₃), -O(C=O)CH₂CH₃, or

when m is 1; when X₁, X₂, X₃ and X₄ are each =O; when R₂ is -CN or -OH; when R₄ and R₆ are each -CH₃; when R₅ and R₇ are each -OCH₃; when R₈ is H; and R₁ is -NH(C=O)R_C, then R_C is not -CH(NR_wR_Y)(CH₂R_Z) where R_w and R_Y are each independently hydrogen or C₁₋₇ alkyl, aryl(C₁₋₄)alkyl, (C₁₋₄)alkylaryl, a substituted sulfonyl (-S(O)₂-) group, or a substituted acyl group, and where R_Z is hydrogen or C₁₋₄ alkyl; or

when m is 1; when X₁, X₂, X₃ and X₄ are each =O; when R₂ is -CN; when R₄ and R₆ are each -CH₃; when R₅ and R₇ are each -OCH₃; when R₈ is H; and R₁ is -NH(C=O)R_C, then R_C is not -C(OH)(Me)CH₂(C=O)Me; or

when m is 1 and when R₂ is H; and R₁ is -NH(C=O)R_C, then R_C is not -CH(Me)NH(C=O)O(CH₂)Ph; or

when m is 0; R₂ is H; X₃ is H; and R₁ is -C(=O)R_A, then R_A is not -O(alkyl); or

when R₂ is H; m is 1; and R₁ is -OR_A, then R_A is not -C(=O)R_C, or S(O)₂R_C, wherein R_C is an alkyl moiety.

13. The compound of claim 1, wherein m is 0 or 1.
14. The compound of claim 1, wherein R₂ is CN, -SCN, =O, OH, protected hydroxyl, H, or alkoxy.
15. The compound of claim 1, wherein R₂ is hydrogen, hydroxyl, -CN or -SCN.
16. The compound of claim 1, wherein R₈ is hydrogen.
17. The compound of claim 1, wherein X₁, X₂, X₃, and X₄ are each independently alkoxy, OH, protected hydroxyl, or =O.
18. The compound of claim 1, wherein R₂ is CN, -SCN, =O, OH, protected hydroxyl, H, or alkoxy; R₃ is hydrogen, a nitrogen protecting group, -CN, aliphatic, or aryl; R₄ and R₆ are each alkyl; R₅ and R₇ are each alkyloxy or thioalkyl; R₈ is hydrogen, alkyl, -OH, protected hydroxyl, =O, CN, halogen, SH, alkoxy, thioalkyl, amino, or alkylamino; and X₁, X₂, X₃, and X₄ are each independently alkoxy, OH or =O.
19. The compound of claim 1, wherein R₂ is -CN, -SCN, -OH, protected hydroxyl, H, or alkoxy; R₃ is hydrogen, a nitrogen protecting group, aliphatic, or aryl; R₄ and R₆ are each alkyl; R₅ and R₇ are each alkyloxy or thioalkyl; X₁ and X₄ are each -OH; R₈ is hydrogen, alkyl, OH, protected hydroxyl, =O, CN, halogen, SH, alkoxy, thioalkyl, amino, or alkylamino; and X₂ and X₃ are each alkyloxy or thioalkyl.
20. The compound of claim 1, wherein X₁ is OH, X₂ is OCH₃, X₃ is OCH₃, X₄ is OH, R₂ is CN, H or OH, R₃ is Me, R₄ is CH₃, R₅ is OCH₃, R₆ is CH₃, R₇ is OCH₃, and R₈ is H.
21. The compound of claim 1, wherein R₁ is OR_A, or SR_A, ~~or~~ NR_AR_B, wherein R_A and R_B are each independently hydrogen, -(C=O)R_C or an aliphatic, heteroaliphatic, aryl, or heteroaryl

moiety, wherein R_C is $-(C=O)R_D$, or an aliphatic, heteroaliphatic, aryl or heteroaryl moiety, and wherein R_D is an aliphatic, heteroaliphatic, aryl, or heteroaryl moiety, ~~or wherein R_A and R_B , taken together, form a heterocyclic moiety,~~

whereby each of said aliphatic and heteroaliphatic moieties is independently substituted or unsubstituted, branched or unbranched, or cyclic or acyclic, and each of said aryl, heteroaryl and heterocyclic moieties is independently substituted or unsubstituted.

22. The compound of claim 1, wherein R_1 is OR_A , or SR_A , ~~or~~ NR_AR_B ; wherein R_A and R_B are each independently hydrogen, $-(C=O)R_C$, or an aryl, (aliphatic)aryl, (heteroaliphatic)aryl, heteroaryl, (aliphatic)heteroaryl, or (heteroaliphatic)heteroaryl moiety, wherein R_C is an aryl, (aliphatic)aryl, (heteroaliphatic)aryl, heteroaryl, (aliphatic)heteroaryl, or (heteroaliphatic)heteroaryl moiety, ~~or wherein R_A and R_B , taken together, form a heterocyclic moiety,~~

whereby each of said aliphatic and heteroaliphatic moieties is independently substituted or unsubstituted, branched or unbranched, or cyclic or acyclic, and each of said aryl, heteroaryl and heterocyclic moieties is independently substituted or unsubstituted.

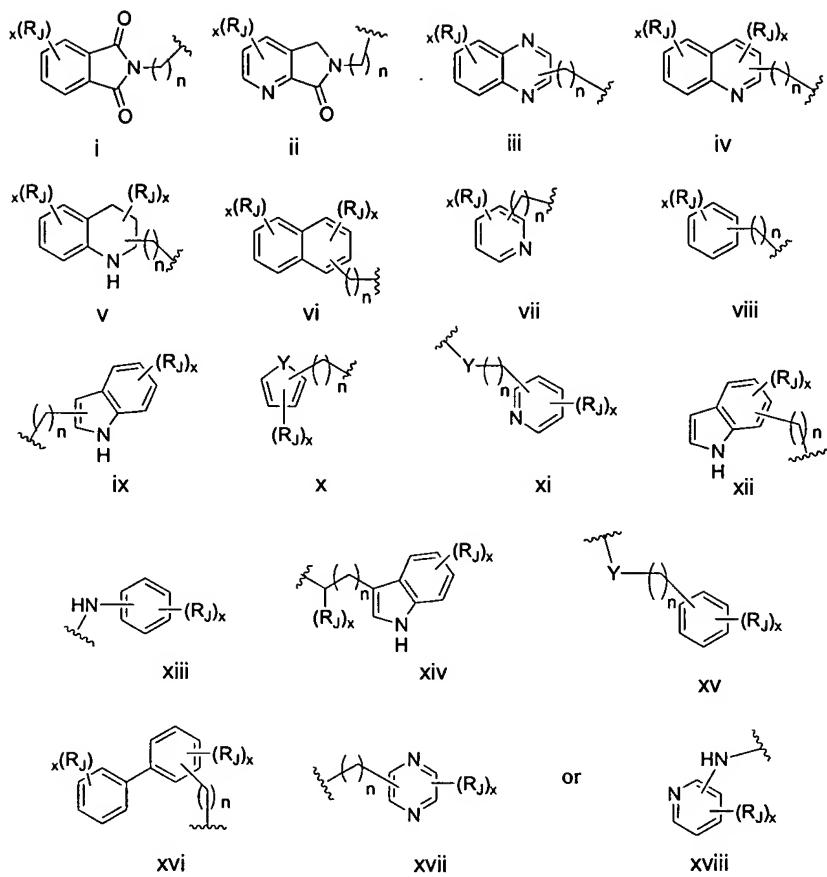
23. (Canceled)

24. (Canceled)

25. (Canceled)

26. (Canceled)

27. The compound of claim 1, wherein any one or more of R_1 , R_A , R_B , R_C , or R_D is independently any one of the following groups:



wherein each occurrence of R_J is independently hydrogen, a protecting group, $-OR_K$, $=O$, $-C(=O)R_K$, $-CO_2R_K$, $-CN$, $-SCN$, halogen, $-SR_K$, $-SOR_K$, $-SO_2R_K$, $-NO_2$, $-N(R_K)_2$, $-NHC(O)R_K$, $-B(OR_K)_2$, or an aliphatic, heteroaliphatic, aryl, or heteroaryl moiety, wherein each occurrence of R_K is independently hydrogen, or an aliphatic, heteroaliphatic, aryl, or heteroaryl moiety, or wherein two occurrences of R_K , taken together form a cyclic aliphatic or heteroaliphatic moiety; wherein each occurrence of Y is independently O, S or NH; wherein each occurrence of x is independently 0-5; and wherein each occurrence of n is independently 0-3, or wherein R_J is a labeling reagent,

whereby each of said aliphatic and heteroaliphatic moieties are independently substituted or unsubstituted, branched or unbranched or cyclic or acyclic, and each of said aryl and heteroaryl moieties is independently substituted or unsubstituted.

28. (Canceled)

29. (Canceled)

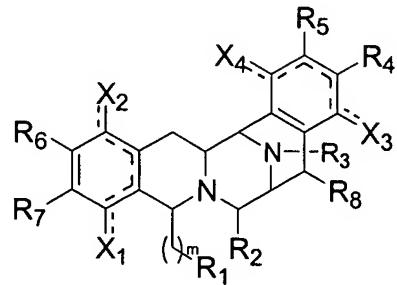
30. The compound of claim 27, 28 or 29, wherein R_J is hydrogen, halogen, -OH, lower alkyl or lower alkoxy.

31. The compound of claim 27, 28 or 29, wherein R_J is a linker-biotin or a linker-fluorescein moiety.

32. The compound of claim 27, 28 or 29, wherein x is 1 or 2.

33-64. (Canceled)

65. A pharmaceutical composition comprising:
a compound having the structure (I):



(I)

wherein R₁ is NR_AR_B, -OR_A, or -SR_A, C(=O)R_A, C(=S)R_A, S(O)₂R_A, or an aliphatic, heteroaliphatic, aryl, heteroaryl, (aliphatic)aryl, (aliphatic)heteroaryl, (heteroaliphatic)aryl, or (heteroaliphatic)heteroaryl moiety, wherein each occurrence of R_A and R_B is independently hydrogen, -(C=O)R_C, -NHR_C, -(SO₂)R_C, -OR_C, or an aliphatic, heteroaliphatic, aryl, or heteroaryl moiety, or R_A and R_B, when taken together form an aryl, heteroaryl, cycloaliphatic, or cycloheteroaliphatic moiety, wherein each occurrence of R_C is independently hydrogen, -OR_D, -

SR_D , $-\text{NHR}_D$, $-(\text{C}=\text{O})\text{R}_D$, or an aliphatic, heteroaliphatic, aryl, or heteroaryl moiety, wherein each occurrence of R_D is independently hydrogen, a protecting group, or an aliphatic, heteroaliphatic, aryl, heteroaryl, acyl, alkoxy, aryloxy, alkylthio, arylthio, heteroaryloxy, or heteroarylthio moiety;

wherein R_2 is hydrogen, $-\text{OR}_E$, $=\text{O}$, $-\text{C}(\text{=O})\text{R}_E$, $-\text{CO}_2\text{R}_E$, $-\text{CN}$, $-\text{SCN}$, halogen, $-\text{SR}_E$, $-\text{SOR}_E$, $-\text{SO}_2\text{R}_E$, $-\text{NO}_2$, $-\text{N}(\text{R}_E)_2$, $-\text{NHC(O)R}_E$, or an aliphatic, heteroaliphatic, aryl, or heteroaryl moiety, wherein each occurrence of R_E is independently hydrogen, a protecting group, or an aliphatic, heteroaliphatic, aryl, heteroaryl, acyl, alkoxy, aryloxy, alkylthio, arylthio, heteroaryloxy, or heteroarylthio moiety;

wherein R_3 is hydrogen, a nitrogen protecting group, $-\text{COOR}_F$, $-\text{COR}_F$, $-\text{CN}$, or an aliphatic, heteroaliphatic, aryl, or heteroaryl moiety, wherein each occurrence of R_F is independently hydrogen, a protecting group, or an aliphatic, heteroaliphatic, aryl, heteroaryl, alkoxy, aryloxy, alkylthio, arylthio, heteroaryloxy, or heteroarylthio moiety;

wherein R_4 and R_6 are each independently hydrogen, or an aliphatic, heteroaliphatic, aryl, heteroaryl, acyl, alkoxy, aryloxy, alkylthio, arylthio, heteroaryloxy, or heteroarylthio moiety;

wherein R_5 and R_7 are each independently hydrogen, $-\text{OR}_G$, $-\text{C}(\text{=O})\text{R}_G$, $-\text{CO}_2\text{R}_G$, $-\text{CN}$, $-\text{SCN}$, halogen, $-\text{SR}_G$, $-\text{SOR}_G$, $-\text{SO}_2\text{R}_G$, $-\text{NO}_2$, $-\text{N}(\text{R}_G)_2$, $-\text{NHC(O)R}_G$, or an aliphatic, heteroaliphatic, aryl or heteroaryl moiety, wherein each occurrence of R_G is independently hydrogen, a protecting group, or an aliphatic, heteroaliphatic, aryl, heteroaryl, acyl, alkoxy, aryloxy, alkylthio, arylthio, heteroaryloxy, or heteroarylthio moiety;

wherein R_8 is hydrogen, alkyl, $-\text{OH}$, protected hydroxyl, $=\text{O}$, $-\text{CN}$, $-\text{SCN}$, halogen, $-\text{SH}$, protected thio, alkoxy, thioalkyl, amino, protected amino, or alkylamino;

wherein m is 0-5;

wherein X_1 , X_2 , X_3 and X_4 are each independently hydrogen, $-\text{OR}_H$, $=\text{O}$, $-\text{C}(\text{=O})\text{R}_H$, $-\text{CO}_2\text{R}_H$, $-\text{CN}$, $-\text{SCN}$, halogen, $-\text{SR}_H$, $-\text{SOR}_H$, $-\text{SO}_2\text{R}_H$, $-\text{NO}_2$, $-\text{N}(\text{R}_H)_2$, $-\text{NHC(O)R}_H$, or an aliphatic, heteroaliphatic, aryl, or heteroaryl moiety, wherein each occurrence of R_H is independently hydrogen, a protecting group, or an aliphatic, heteroaliphatic, aryl, heteroaryl, acyl, alkoxy, aryloxy, alkylthio, arylthio, heteroaryloxy, or heteroarylthio moiety;

whereby if at least either X_1 and X_2 or X_3 and X_4 are doubly bonded to the 6-membered ring, then the dotted bonds in either or both of the 6-membered rings represent two single bonds

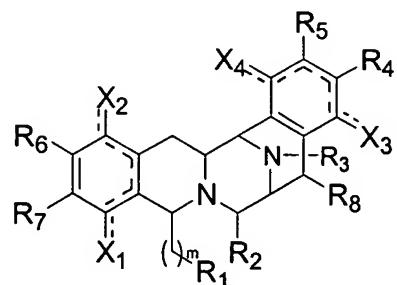
and one double bond, and a quinone moiety is generated, or if at least either X₁ and X₂ or X₃ and X₄ are singly bonded to the 6-membered ring, then the dotted bonds in either or both of the 6-membered rings represent two double bonds and one single bond, and a hydroquinone moiety is generated;

whereby each of the foregoing aliphatic, heteroaliphatic and alkyl moieties may independently be substituted or unsubstituted, branched or unbranched, or cyclic or acyclic, and each of the foregoing aryl or heteroaryl moieties may independently be substituted or unsubstituted, and pharmaceutically acceptable derivatives thereof; and
a pharmaceutically acceptable carrier or diluent.

66. (Canceled)

67. (Canceled)

68. A method for inhibiting the growth of or killing cancer cells comprising:
contacting the cells with an amount of a composition effective to inhibit the growth of or to kill cancer cells, the composition comprising a compound of formula (I) or pharmaceutically derivatives thereof:



(I)

wherein R₁ is NR_AR_B, -OR_A, -SR_A, -C(=O)R_A, C(=S)R_A, S(O)₂R_A, or an aliphatic, heteroaliphatic, aryl, heteroaryl, (aliphatic)aryl, (aliphatic)heteroaryl, (heteroaliphatic)aryl, or (heteroaliphatic)heteroaryl moiety, wherein each occurrence of R_A and R_B is independently hydrogen, -(C=O)R_C, -NHR_C, -(SO₂)R_C, -OR_C, or an aliphatic, heteroaliphatic, aryl, or heteroaryl

moiety, or R_A and R_B , when taken together form an aryl, heteroaryl, cycloaliphatic, or cycloheteroaliphatic moiety, wherein each occurrence of R_C is independently hydrogen, $-OR_D$, $-SR_D$, $-NHR_D$, $-(C=O)R_D$, or an aliphatic, heteroaliphatic, aryl, or heteroaryl moiety, wherein each occurrence of R_D is independently hydrogen, a protecting group, or an aliphatic, heteroaliphatic, aryl, heteroaryl, acyl, alkoxy, aryloxy, alkylthio, arylthio, heteroaryloxy, or heteroarylthio moiety;

wherein R_2 is hydrogen, $-OR_E$, $=O$, $-C(=O)R_E$, $-CO_2R_E$, $-CN$, $-SCN$, halogen, $-SR_E$, $-SOR_E$, $-SO_2R_E$, $-NO_2$, $-N(R_E)_2$, $-NHC(O)R_E$, or an aliphatic, heteroaliphatic, aryl, or heteroaryl moiety, wherein each occurrence of R_E is independently hydrogen, a protecting group, or an aliphatic, heteroaliphatic, aryl, heteroaryl, acyl, alkoxy, aryloxy, alkylthio, arylthio, heteroaryloxy, or heteroarylthio moiety;

wherein R_3 is hydrogen, a nitrogen protecting group, $-COOR_F$, $-COR_F$, $-CN$, or an aliphatic, heteroaliphatic, aryl, or heteroaryl moiety, wherein each occurrence of R_F is independently hydrogen, a protecting group, or an aliphatic, heteroaliphatic, aryl, heteroaryl, alkoxy, aryloxy, alkylthio, arylthio, heteroaryloxy, or heteroarylthio moiety;

wherein R_4 and R_6 are each independently hydrogen, or an aliphatic, heteroaliphatic, aryl, heteroaryl, acyl, alkoxy, aryloxy, alkylthio, arylthio, heteroaryloxy, or heteroarylthio moiety;

wherein R_5 and R_7 are each independently hydrogen, $-OR_G$, $-C(=O)R_G$, $-CO_2R_G$, $-CN$, $-SCN$, halogen, $-SR_G$, $-SOR_G$, $-SO_2R_G$, $-NO_2$, $-N(R_G)_2$, $-NHC(O)R_G$, or an aliphatic, heteroaliphatic, aryl or heteroaryl moiety, wherein each occurrence of R_G is independently hydrogen, a protecting group, or an aliphatic, heteroaliphatic, aryl, heteroaryl, acyl, alkoxy, aryloxy, alkylthio, arylthio, heteroaryloxy, or heteroarylthio moiety;

wherein R_8 is hydrogen, alkyl, $-OH$, protected hydroxyl, $=O$, $-CN$, $-SCN$, halogen, $-SH$, protected thio, alkoxy, thioalkyl, amino, protected amino, or alkylamino;

wherein m is 0-5;

wherein X_1 , X_2 , X_3 and X_4 are each independently hydrogen, $-OR_H$, $=O$, $-C(=O)R_H$, $-CO_2R_H$, $-CN$, $-SCN$, halogen, $-SR_H$, $-SOR_H$, $-SO_2R_H$, $-NO_2$, $-N(R_H)_2$, $-NHC(O)R_H$, or an aliphatic, heteroaliphatic, aryl, or heteroaryl moiety, wherein each occurrence of R_H is independently hydrogen, a protecting group, or an aliphatic, heteroaliphatic, aryl, heteroaryl, acyl, alkoxy, aryloxy, alkylthio, arylthio, heteroaryloxy, or heteroarylthio moiety;

whereby if at least either X₁ and X₂ or X₃ and X₄ are doubly bonded to the 6-membered ring, then the dotted bonds in either or both of the 6-membered rings represent two single bonds and one double bond, and a quinone moiety is generated, or if at least either X₁ and X₂ or X₃ and X₄ are singly bonded to the 6-membered ring, then the dotted bonds in either or both of the 6-membered rings represent two double bonds and one single bond, and a hydroquinone moiety is generated;

whereby each of the foregoing aliphatic, heteroaliphatic and alkyl moieties may independently be substituted or unsubstituted, branched or unbranched, or cyclic or acyclic, and each of the foregoing aryl or heteroaryl moieties may independently be substituted or unsubstituted; and pharmaceutically acceptable derivatives thereof; and

optionally further comprising a pharmaceutically acceptable carrier or diluent.

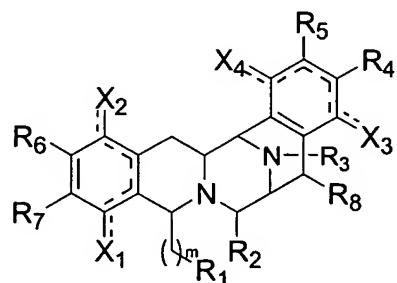
69. (Canceled)

70. (Canceled)

71. The method of claim 68, wherein the cancer cells comprise melanoma cancer cells or lung cancer cells.

72. A method for treating cancer comprising:

administering to a subject in need thereof a therapeutically effective amount of a composition comprising a compound of formula (I) or pharmaceutically acceptable derivatives thereof:



wherein R₁ is NR_AR_B, -OR_A, or -SR_A, -C(=O)R_A, -C(=S)R_A, -S(O)₂R_A, or an aliphatic, heteroaliphatic, aryl, heteroaryl, (aliphatic)aryl, (aliphatic)heteroaryl, (heteroaliphatic)aryl, or (heteroaliphatic)heteroaryl moiety, wherein each occurrence of R_A and R_B is independently hydrogen, -(C=O)R_C, -NHR_C, -(SO₂)R_C, -OR_C, or an aliphatic, heteroaliphatic, aryl, or heteroaryl moiety, or R_A and R_B, when taken together form an aryl, heteroaryl, cycloaliphatic, or cycloheteroaliphatic moiety, wherein each occurrence of R_C is independently hydrogen, -OR_D, -SR_D, -NHR_D, -(C=O)R_D, or an aliphatic, heteroaliphatic, aryl, or heteroaryl moiety, wherein each occurrence of R_D is independently hydrogen, a protecting group, or an aliphatic, heteroaliphatic, aryl, heteroaryl, acyl, alkoxy, aryloxy, alkylthio, arylthio, heteroaryloxy, or heteroarylthio moiety;

wherein R₂ is hydrogen, -OR_E, =O, -C(=O)R_E, -CO₂R_E, -CN, -SCN, halogen, -SR_E, -SOR_E, -SO₂R_E, -NO₂, -N(R_E)₂, -NHC(O)R_E, or an aliphatic, heteroaliphatic, aryl, or heteroaryl moiety, wherein each occurrence of R_E is independently hydrogen, a protecting group, or an aliphatic, heteroaliphatic, aryl, heteroaryl, acyl, alkoxy, aryloxy, alkylthio, arylthio, heteroaryloxy, or heteroarylthio moiety;

wherein R₃ is hydrogen, a nitrogen protecting group, -COOR_F, -COR_F, -CN, or an aliphatic, heteroaliphatic, aryl, or heteroaryl moiety, wherein each occurrence of R_F is independently hydrogen, a protecting group, or an aliphatic, heteroaliphatic, aryl, heteroaryl, alkoxy, aryloxy, alkylthio, arylthio, heteroaryloxy, or heteroarylthio moiety;

wherein R₄ and R₆ are each independently hydrogen, or an aliphatic, heteroaliphatic, aryl, heteroaryl, acyl, alkoxy, aryloxy, alkylthio, arylthio, heteroaryloxy, or heteroarylthio moiety;

wherein R₅ and R₇ are each independently hydrogen, -OR_G, -C(=O)R_G, -CO₂R_G, -CN, -SCN, halogen, -SR_G, -SOR_G, -SO₂R_G, -NO₂, -N(R_G)₂, -NHC(O)R_G, or an aliphatic, heteroaliphatic, aryl or heteroaryl moiety, wherein each occurrence of R_G is independently hydrogen, a protecting group, or an aliphatic, heteroaliphatic, aryl, heteroaryl, acyl, alkoxy, aryloxy, alkylthio, arylthio, heteroaryloxy, or heteroarylthio moiety;

wherein R₈ is hydrogen, alkyl, -OH, protected hydroxyl, =O, -CN, -SCN, halogen, -SH, protected thio, alkoxy, thioalkyl, amino, protected amino, or alkylamino;

wherein m is 0-5;

wherein X₁, X₂, X₃ and X₄ are each independently hydrogen, -OR_H, =O, -C(=O)R_H, -CO₂R_H, -CN, -SCN, halogen, -SR_H, -SOR_H, -SO₂R_H, -NO₂, -N(R_H)₂, -NHC(O)R_H, or an aliphatic, heteroaliphatic, aryl, or heteroaryl moiety, wherein each occurrence of R_H is independently hydrogen, a protecting group, or an aliphatic, heteroaliphatic, aryl, heteroaryl, acyl, alkoxy, aryloxy, alkylthio, arylthio, heteroaryloxy, or heteroarylthio moiety;

whereby if at least either X₁ and X₂ or X₃ and X₄ are doubly bonded to the 6-membered ring, then the dotted bonds in either or both of the 6-membered rings represent two single bonds and one double bond, and a quinone moiety is generated, or if at least either X₁ and X₂ or X₃ and X₄ are singly bonded to the 6-membered ring, then the dotted bonds in either or both of the 6-membered rings represent two double bonds and one single bond, and a hydroquinone moiety is generated;

whereby each of the foregoing aliphatic, heteroaliphatic and alkyl moieties may independently be substituted or unsubstituted, branched or unbranched, or cyclic or acyclic, and each of the foregoing aryl or heteroaryl moieties may independently be substituted or unsubstituted; and

optionally further comprising a pharmaceutically acceptable carrier or diluent.

73. (Canceled)

74. (Canceled)

75. The method of claim 72, wherein the cancer cells comprise melanoma cancer cells or lung cancer cells.

76-82. (Canceled)